

**D-3**

**GORDON**

**COMMENTS ON METHODOLOGY**

## Comments on Basic Methodology of WES Movable Bed Models

1. **Discharge Scale:** This section has been sugarcoated.  
The statement, "the model discharge had to be variable to provide the same relation of model sediment movement to that of the prototype for the range of flow and stages reproduced" cannot possibly be true. This is a strong statement considering that it says the model had the same relation of sediment movement as the prototype. This was simply an empirical determination on the part of the model operators. previous statement that "model was operated very near the critical tractive force ... realizing that the prototype operated considerably above that range" clearly states where the model operated. The relation mentioned here simply states that the discharge had to provide the same relation (model Shields parameter less than prototype) throughout the hydrograph.
3. **Sediment type...** The section has also been sugarcoated. I don't follow your inference. This seems to be about the same as previous versions. Simply stated, this describes the basic sizing of the sediment materials, the type of input (feed versus recirculation which is a fairly straight forward issue), and the general way that the inflowing sediment-discharge relationship was obtained.
9. **Adjustments of Rails.** Let's state plainly and truthfully what was done here. It is confusing to discuss another supplementary slope. How can the localized manipulation of the rails adjust the slope in the model? The rails were simply used as a datum from which bed elevations were surveyed. Artificially raising or lowering the bed in local areas during the molding process would not have any effect on the end bed configuration if the model was run to stability. The last sentence even states that the rails were used for datum elevation adjustments. As you point out, the last sentence says explicitly that rails were used for datum adjustments. There doesn't seem any point to belabor this issue further.

Last paragraph discussing flow visualization. I dispute the statement, "It was merely another indication of the plan effects and was not relatable to any type of navigation condition evaluation." The following supportive statements were taken from the Dogtooth Bend study report:

- Results of Plan G-2. "The improved flow patterns, coupled with the increases in navigation channel width through the bends and crossings, would improve navigation and increase the margin of safety associated with this reach... The need for tows to flank during low and medium stages should be minimized."
- Conclusion b. "Visual observations aided by floating confetti indicated that dikes angled downstream (Plans A through E-4) redirected the surface water currents toward the outer bank of the bend. This would adversely affect navigation, and the increased hydraulic forces on the revetment could threaten the integrity and stability of the bank and would likely result in increased maintenance costs..."

- Conclusion c. "Compared to all other plans tested in the model, Plan G-2 was the best at solving the complex multitude of problems associated with this study reach. Results after six runs demonstrated that the bendway weirs of Plan G-2 were the most effective in improving the alignment and widening the navigation channel through the bends and downstream crossings; constructively redistributing flow patterns; depositing significant amounts of sediment on the toe of the outside bank revetment; redistributing velocities in a more uniform manner; and improving the navigation channel in the crossing downstream of the bend."

The Greenville Bridge study report makes similar claims as well. would you provide copy of representative conclusions/statements for this one like the previous 3 for Dogtooth?

noted and a sentence added stating "However, general assessments regarding the effect of flow patterns (identified by the model flow visualization) on navigation were made in the Dogtooth Bend and Greenville Bridge model studies." --- In order for this to stay, I have to have the full references for the Dogtooth Bend and Greenville Bridge models so please provide reference.. Otherwise, it will need to come out because I don't have time to include a long discourse on each of these models and find the references from the WES library myself.